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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : C12N 15/12, 15/56, 9/26, C07K 14/47, 14/705, 14/785, A61K 38/17, 38/47		A3	(11) International Publication Number: WO 00/18922
			(43) International Publication Date: 6 April 2000 (06.04.00)
(21) International Application Number: PCT/US99/22685			(71) Applicant (for all designated States except US): INCYTE PHARMACEUTICALS, INC. [US/US]; 3174 Porter Drive, Palo Alto, CA 94304 (US).
(22) International Filing Date: 29 September 1999 (29.09.99)			(72) Inventors; and (75) Inventors/Applicants (for US only): AU-YOUNG, Janice [US/US]; 1419 Kains Avenue, Berkeley, CA 94702 (US). LAL, Preeti [IN/US]; 2382 Lass Drive, Santa Clara, CA 95054 (US). BANDMAN, Olga [US/US]; 366 Anna Avenue, Mountain View, CA 94043 (US). REDDY, Roopa [IN/US]; 1233 W. McKinley Drive, Sunnyvale, CA 94086 (US). BAUGHN, Mariah, R. [US/US]; 14244 Santiago Road, San Leandro, CA 94577 (US). YUE, Henry [US/US]; 826 Lois Avenue, Sunnyvale, CA 94087 (US). HILLMAN, Jennifer, L. [US/US]; 230 Monroe Drive #12, Mountain View, CA 94040 (US).
(30) Priority Data: 60/155,267 1 October 1998 (01.10.98) US 60/155,266 6 October 1998 (06.10.98) US 60/155,227 13 November 1998 (13.11.98) US 09/205,656 3 December 1998 (03.12.98) US Not furnished 3 December 1998 (03.12.98) US 60/240934			(74) Agents: BILLINGS, Lucy, J. et al.; Incyte Pharmaceuticals, Inc., 3174 Porter Drive, Palo Alto, CA 94304 (US).
(63) Related by Continuation (CON) or Continuation-in-Part (CIP) to Earlier Applications US 09/167,179 (CIP) Filed on 6 October 1998 (06.10.98) US 09/191,838 (CIP) Filed on 13 November 1998 (13.11.98) US 09/205,656 (CIP) Filed on 3 December 1998 (03.12.98) US 09/164,785 (CIP) Filed on 1 October 1998 (01.10.98)			(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
			Published With international search report.
			(88) Date of publication of the international search report: 26 October 2000 (26.10.00)

(54) Title: HUMAN CARBOHYDRATE-ASSOCIATED PROTEINS

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1  M-----[AGSVADSNNAVVK] 714029
1  MLSLNNLQNI IYNFVIFPV[G]TIP[D]QLDPGT GI 2810994
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31  L I V I R G H V P S D A D R F Q V D L Q N G S S V K P R A D GI 2810994
31  V Y F----- 714029
61  V A E H F N P R F K R A G C I V C N T L I N E K W G R E E I GI 2810994
34  ----- 714029
91  T Y D T P F K R E K S F E I V I M V L K D K F Q V A V N G K GI 2810994
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34  -----[P] 714029
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65  E S F A I S L T C G D S E D P P A D V A I E L K A V F T D R 714029
211 K S E N V D L L A G R K S R D-----I A L H L N P R L N I K GI 2810994
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(57) Abstract

The invention provides human carbohydrate-associated proteins (CRBAP) and polynucleotides which identify and encode CRBAP. The invention also provides expression vectors, host cells, antibodies, agonists, and antagonists. The invention also provides methods for diagnosing, treating, or preventing disorders associated with expression of CRBAP.

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PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference PF-0604 PCT	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/US 99/ 22685	International filing date (day/month/year) 29/09/1999	(Earliest) Priority Date (day/month/year) 01/10/1998
Applicant INCYTE PHARMACEUTICALS, INC. et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 8 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☒ contained in the international application in written form.

☒ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☒ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☒ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☒ **Certain claims were found unsearchable** (See Box I).

3. ☒ **Unity of Invention is lacking** (see Box II).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1A

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/22685

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/12 C12N15/56 C12N9/26 C07K14/47 C07K14/705
C07K14/785 A61K38/17 A61K38/47

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DATABASE EMBEST30 [Online] EMBL ID HSN6454, AC N90645, 25 July 1996 (1996-07-25) HILLIER L ET AL.: "za19e04.r1 Soares fetal liver spleen INFLS Homo sapiens cDNA clone 293022 5' similar to PIR:A55932 A55932 galectin-5 - rat" XP002132917	1-6, 9-14,16
Y	Note: 90.2 % aa sequence identity of translated sequence with SEQ ID NO:1 in 132-aa overlap, 98.4 % nt sequence identity with SEQ ID NO:8 in 508-bp overlap (nt 91-593). the whole document --- -/-	7,8,15, 19

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
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- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

21 March 2000

Date of mailing of the international search report

05. 07. 00

Name and mailing address of the ISA

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Authorized officer

van de Kamp, M

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE EMBEST28 [Online] EMBL ID HSA24660, AC AA024660, 14 August 1996 (1996-08-14) HILLIER L ET AL.: "ze77h03.s1 Soares fetal heart NbHH19W Homo sapiens cDNA clone 365045 3' similar to SW:LEG4_RAT P38552 GALECTIN-4" XP002132918</p>	1-6, 9-14,16
Y	<p>Note: 97.9 % aa sequence identity of translated sequence with SEQ ID NO:1 in 47-aa overlap, 99.0 % nt sequence identity with SEQ ID NO:8 in 386-bp overlap (nt 794-409 (reverse direction)). the whole document</p>	7,8,15, 19
Y	<p>--- WO 96 21671 A (UNIV COLUMBIA ; FISHER PAUL B (US); SHEN RUOQUAN (US)) 18 July 1996 (1996-07-18) Note: 35.5 % aa sequence identity of PCTA-1 with SEQ ID NO:1 in 138-aa overlap. figure 18AB page 30, line 1 -page 35, line 18 page 109, line 24 -page 111, line 21 claims 1-40</p>	7,8,15, 19
Y	<p>--- WO 95 15175 A (YEDA RES & DEV ; RYCUS AVIGAIL (IL); ZICK YAHIEL (IL)) 8 June 1995 (1995-06-08) page 9, line 35 -page 10, line 1 examples 9,13,14 claims 1-14</p>	7,8,15, 19
A	<p>--- HADARI Y R ET AL.: "Galectin-8: On the road from structure to function" TRENDS IN GLYCOSCIENCE AND GLYCOTECHNOLOGY, vol. 9, no. 45, January 1997 (1997-01), pages 103-112, XP000892450 Note: 35.5 % aa sequence identity of SEQ ID NO:1 with SEQ ID NO:1 in 138-aa overlap. abstract page 110-111</p>	1,9
A	<p>--- WO 98 00553 A (INCYTE PHARMA INC ; AU YOUNG JANICE (US); HAWKINS PHILLIP R (US); H) 8 January 1998 (1998-01-08) page 1-3</p> <p>--- -/-</p>	

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>NGUYEN TH D ET AL.: "Gene structure and properties of TIGR, an olfactomedin-related glycoprotein cloned from glucocorticoid-induced trabecular meshwork cells"</p> <p>JOURNAL OF BIOLOGICAL CHEMISTRY, vol. 273, no. 11, 13 March 1998 (1998-03-13), pages 6341-6350, XP002132916 abstract figure 7A</p> <p>-----</p>	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 99/22685

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
Remark (1): Although claim 19 is directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☒ Claims Nos.: 17,18,20
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheets

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-20 (all partially); 21 completely

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

1. Claims: 1-20 (all partially); 21 (completely)

A substantially purified polypeptide CRBAP-1 (CRBAP: carbohydrate-associated protein) comprising the amino acid sequence of SEQ ID NO:1 and fragments and homologous variants thereof. An isolated and purified polynucleotide encoding said polypeptide or fragments or variants, and a polynucleotide hybridizing to said polynucleotide. A polynucleotide which is complementary to said first polynucleotide and a method for detecting a polynucleotide by hybridizing with said complementary polynucleotide. An isolated and purified polynucleotide comprising the polynucleotide sequence of SEQ ID NO:8 and fragments and homologous variants thereof, as well as a polynucleotide which is complementary to said polynucleotide. Expression vectors, host cells, methods for producing said polypeptide, pharmaceutical compositions, purified antibodies, agonists and antagonists, methods for treating or preventing a disorder related to the expression or activity of CRBAP-1. An isolated and purified polynucleotide comprising the polynucleotide of SEQ ID NO:8 containing a single nucleotide polymorphism with C replacing T at position 428, or fragments thereof.

2. Claims: 1-20 (all partially)

A substantially purified polypeptide CRBAP-3 comprising the amino acid sequence of SEQ ID NO:3 and fragments and homologous variants thereof. An isolated and purified polynucleotide encoding said polypeptide or fragments or variants, and a polynucleotide hybridizing to said polynucleotide. A polynucleotide which is complementary to said first polynucleotide and a method for detecting a polynucleotide by hybridizing with said complementary polynucleotide. An isolated and purified polynucleotide comprising the polynucleotide sequence of SEQ ID NO:10 and fragments and homologous variants thereof, as well as a polynucleotide which is complementary to said polynucleotide. Expression vectors, host cells, methods for producing said polypeptide, pharmaceutical compositions, purified antibodies, agonists and antagonists, methods for treating or preventing a disorder related to the expression or activity of CRBAP-3.

3. Claims: 1-20 (all partially)

As invention 2, but concerning SEQ ID NOs 4 and 11 (CRBAP-4).

4. Claims: 1-20 (all partially)

As invention 2, but concerning SEQ ID NOs 5 and 12 (CRBAP-5).

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

5. Claims: 1-20 (all partially)

As invention 2, but concerning SEQ ID NOs 6 and 13 (CRBAP-6).

6. Claims: 1-20 (all partially)

As invention 2, but concerning SEQ ID NOs 7 and 14 (CRBAP-7).

7. Claims: 9-11 (all partially)

An isolated and purified polynucleotide comprising the polynucleotide sequence of SEQ ID NO:9 and fragments and homologous variants thereof, as well as a polynucleotide which is complementary to said polynucleotide.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 17,18,20

Remark (2): Claims 17 and 18, and the dependent claim 20, refer to agonists and/or antagonists of the polypeptide(s) without giving a true technical characterisation. Moreover, no specific compounds are defined in the application. In consequence, the scope of said claims is ambiguous and vague, and their subject-matter is not sufficiently disclosed and supported (Art. 5 and 6 PCT). No search can be carried out for such purely speculative claims whose wording is, in fact, a mere recitation of the results to be achieved.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 99/22685

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9621671 A	18-07-1996	US 5851764 A	22-12-1998
		AU 709056 B	19-08-1999
		AU 4751196 A	31-07-1996
		CA 2209941 A	18-07-1996
		EP 0804458 A	05-11-1997
		JP 11502404 T	02-03-1999
WO 9515175 A	08-06-1995	EP 0812202 A	17-12-1997
		US 5908761 A	01-06-1999
WO 9800553 A	08-01-1998	US 5958750 A	28-09-1999
		AU 3409897 A	21-01-1998
		US 5854046 A	29-12-1998
		US 6057110 A	02-05-2000